

REMARKS

Applicants respectfully request reconsideration of the above referenced patent application in view of the amendments and remarks set forth herein, and respectfully request that the Examiner withdraw all rejections. Claims 1, 4, 5, 7, 10, 11, 13, 16, 17, 19, 20, 23, 24 and 26 have been amended. Claims 18, 25 and 27-40 have been canceled without prejudice. No claims have been added. Thus, claims 1-17, 19-24 and 26 are pending.

35 U.S.C. §112 Rejections

Rejections under 35 U.S.C. §112, ¶1- Written Description

The Office Action rejects claims 1-40 under 35 U.S.C. §112, ¶1 for failure to meet the written description requirement. In order to advance the application to allowance, and without agreeing with any characterizations in the Final Office Action which are offered as a basis for claim rejection, Applicants cancel claims 18, 25 and 27-40 without prejudice. With regard to pending claims 1-17, 19-24 and 26, Applicants traverse the above rejection for at least the following reasons.

The Final Office Action (e.g., page 3 lines 7-8 and 13-14) bases the above rejections on various allegations that the claims contain subject matter which is not “**specifically disclosed** in the original specification” (emphasis added). However, as stated in M.P.E.P. §2163(I) (emphasis added), “[t]o satisfy the written description requirement, a patent specification must describe the claimed invention **in sufficient detail** that one skilled in the art can **reasonably conclude** that the inventor had possession of the claimed invention.” Accordingly, the above rejections are improper to the extent that they are based on a “specifically disclosed” standard which is stricter than the requirements of 35 U.S.C. §112, ¶1 as described, for example, in M.P.E.P. §2163.

Although a *verbatim* specific disclosure of claimed subject matter in a specification may be **sufficient** to meet the requirements of 35 U.S.C. §112, ¶1, such a specific disclosure is not **necessary** to meet said requirements. More particularly, in the absence of a *verbatim* specific disclosure of the claimed subject matter in the specification, a claim may nevertheless meet the requirements of 35 U.S.C. §112, ¶1, e.g.

where the specification otherwise describes the claimed invention in sufficient detail that one skilled in the art can **reasonably** conclude that the inventor had possession of the claimed invention. As discussed below, Applicants respectfully submit that the claims meet the written description requirements of 35 U.S.C. § 112, ¶1 as described, for example, in M.P.E.P. § 2163.

Regarding pending claims 1-17, 19-24 and 26, the Final Office Action alleges that the specification does not describe various limitations generally directed to computing (or compute) for another (or second) frame of the non active signal another excitation. Applicants amend the claims herein to variously recite (emphasis added):

“...**reusing the lookup table** to encode a next data frame of the signal subsequent to the first data frame only if the next data frame of the signal is not an active voice data frame, the reusing including
 altering the scale factor based on any change in a noise condition of the signal,
 generating a second excitation based on the plurality of random noise samples of the lookup table, and
 generating a second non active voice frame based on the scale factor and the second excitation.”

Applicants respectfully submit that the original disclosure provides a written description for the above limitations, as shown at least by FIG. 3 and by paragraphs [0012], [0026], [0029] and [0030] of the specification. More particularly, the specification discusses reducing computational complexity by **reusing** pre-computed random Gaussian noise samples for **each non active voice frame** versus calculating new random Gaussian noise samples for each non active voice frame. See, e.g. paragraphs [0012] and [0026]. As discussed in paragraph [0026], **scale factors can be used** to match a composite excitation signal (the random noise being a component) to the real environment as the real background or ambient conditions change. In an embodiment, the encoder need not generate a new random noise signal for each non active voice frame because **altering the scale factors** only is sufficient to approximately match the scaled random noise and resulting composite excitation signal to ambient noise conditions. See, e.g. paragraph [0026]. With reference to FIG. 3, paragraph [0029] describes re-using pre-computed Gaussian noise samples from a lookup table to generate a Gaussian excitation. Furthermore, paragraph [0030] describes a single set of random numbers for one non

active voice frame which is computed and re-used in **all other non active voice frames** that trigger comfort noise generation.

For at least the foregoing reasons, Applicants respectfully submit that the above-cited claim limitations are described in the specification in such a way as to **reasonably convey** to one skilled in the relevant art that Applicants, at the time the invention was filed, had possession of the claimed invention.

Regarding pending claims 4, 10, 16 and 23, the Final Office Action alleges that the specification does not **specifically** disclose rescaling a sum of a random adaptive excitation and a random excitation. Applicants respectfully submit that – as required by 35 U.S.C. §112, ¶1 – each of currently amended claims 4, 10, 16 and 23 is described in **sufficient detail** that one skilled in the art can **reasonably conclude** that the inventor had possession of the claimed invention, as discussed below.

As currently amended, the above rejected claims are variously directed to **computing** and **rescaling** a sum of a random adaptive excitation and a random noise sample. These claim limitations are supported in the original disclosure at least by FIG. 3 and by paragraphs [0026] and [0029] of the specification. As discussed in paragraph [0029], FIG. 3 shows a current excitation being **computed** by adding the random adaptive and Gaussian excitation. Paragraph [0029] also describes **rescaling** the current excitation. Furthermore, paragraphs [0026] and [0029] variously describe, for example, that a **noise sample** may be a component of a composite excitation, and that the Gaussian excitation which makes up the composite excitation may be generated from noise samples. Therefore, Applicants respectfully submit that one of ordinary skill in the art could reasonably conclude that Applicants, at the time the application was filed, had possession of the variously claimed computing of a sum of a random adaptive excitation and a random noise sample and rescaling said sum of a random adaptive excitation and a random noise samples.

For at least the foregoing reasons, each of the currently amended claims meets the written description requirements of 35 U.S.C. §112, ¶1. Therefore, Applicants

respectfully request that the 35 U.S.C. §112, ¶1 rejection of pending claims 1-17, 19-24 and 26 be withdrawn.

35 U.S.C. §103(a) Rejections

35 U.S.C. §103(a) Rejection over ITU-T G.729, G.729 Appendix B and Thyssen

The Office Action rejects claims 1-40 under §103(a) as being obvious in light of “ITU-T Recommendation G.729” (hereinafter *ITU-T G.729*) and “G.729 Annex B” 1996 (hereinafter “*G.729 Appendix B*”) in view of Thyssen, USPN 6,813,602 (hereinafter “*Thyssen*”). To establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by one or more prior art references. See M.P.E.P. § 2143.03. In order to advance the application to allowance, and without agreeing with any characterizations in the Final Office Action which are offered as a basis for claim rejection, Applicants cancel claims 18, 25 and 27-40 without prejudice. With regard to pending claims 1-17, 19-24 and 26, Applicants traverse the above rejection for at least the following reasons.

Applicants respectfully submit that each of the above rejected claims is not obvious in light of *ITU-T G.729*, *G.729 Appendix B* and *Thyssen*, based at least on the failure of the references to teach or suggest (emphasis added):

“...**reusing the lookup table** to encode a next data frame of the signal subsequent to the first data frame **only if the next data frame of the signal is not an active voice data frame**, the reusing including
 altering the scale factor based on any change in a noise condition of the signal,
 generating a second excitation based on the plurality of random noise samples of the lookup table, and
 generating a second non active voice frame based on the scale factor and the second excitation.”

as variously recited in current independent claims 1, 7, 13 and 20. The claim amendments are supported in the original disclosure at least by FIG. 3 and by paragraphs [0012], [0026], [0029] of the specification, which variously describe pre-computing random Gaussian noise to create a noise sample template and re-using the pre-computed noise to excite the synthesis filter for each subsequent non active voice frame.

In rejecting the above claims, the Office Action relies on *Thyssen* as allegedly disclosing a reusable codebook. *Thyssen* discusses a random codebook which is implemented utilizing overlap in order to reduce storage space. See, e.g. *Thyssen*, col. 2, lines 65-67. A codebook entry can be reused to generate multiple codevectors. For example, *Thyssen* discusses a random table in *Thyssen* has "L" entries V_0, V_1, \dots, V_L , each entry having N elements $C_0, C_1, \dots, C_{N-1}, C_N$. Each codebook entry acts as a circular buffer whereby N different random codebook vectors are generated by specifying a starting point at each different element in a given codevector. See, e.g. *Thyssen* col. 3, lines 5-12 and FIG. 8. However, although *Thyssen* discusses reusing a codebook entry to generate multiple codevectors, the reference **fails** to describe any relationship between **any encoding** based on one of the multiple codevectors and **any other encoding** based on another of the multiple codevectors. For example, *Thyssen* fails to describe using a codebook entry to encode a first data frame and reusing the codebook entry only if a next data frame subsequent to the first data frame is not an active voice data frame.

With regard to the actual encoding an input speech signal, *Thyssen* discusses encoder processing circuitry which, each time a frame of the input speech signal is to be encoded, searches for new codebook entries to contribute to said encoding. The selection of codebook entries in *Thyssen* is described in terms of respective contributions of adaptive codebook 257 and fixed codebook 261. See, e.g. *Thyssen* FIG. 2. *Thyssen* selects a contribution of adaptive codebook 257 so as to minimize a first error signal 253. See, e.g. *Thyssen* col. 6, lines 44-47. *Thyssen* also searches fixed codebook 261 in an attempt to select a most appropriate contribution while generally attempting to match the second target signal (i.e. first error signal 253). See, e.g. *Thyssen* col. 6, lines 59-65. However, as Applicants understand the reference, each search for a new codebook entry, whether from adaptive codebook 257 or from fixed codebook 261, is independent of any **previous** selecting of a contribution.

By contrast, Applicants claimed invention reuses a lookup table having a plurality of random noise samples **only if** the next data frame of a signal subsequent to a first data frame is not an active voice data frame. By conditioning the reuse of a lookup table only on whether the next data frame is an active voice data frame, Applicants claimed

invention does not need to search a codebook or otherwise compute a new set of noise samples. Applicants claimed invention thereby reduces the computational complexity of previous comfort noise generation algorithms – e.g. by foregoing any searching such as that discussed in *Thyssen*.

To the extent that each encoding in *Thyssen* includes searching for a contribution from fixed codebook 261 according to a **plurality** of search criteria – i.e. selecting a most appropriate contribution while generally attempting to match the second target signal – *Thyssen* fails to teach or suggest, for example, reusing a codebook entry **only** if a next data frame is a non active voice data frame. Even assuming *arguendo* that all other claim limitations were obvious in light of the cited references, which Applicants do not agree, *Thyssen* nevertheless fails to teach or suggest reusing a lookup table to encode a next data frame of a signal subsequent to a first data frame only if the next data frame of the signal is not an active voice data frame. Therefore, the cited references fail to either teach or suggest at least one limitation of the invention as variously recited in each of independent claims 1, 7, 13 and 20.

Accordingly, each of independent claims 1, 7, 13 and 20 is non-obvious in light of *ITU-T G.729, G.729 Appendix B* and *Thyssen*. If an independent claim is non-obvious under 35 U.S.C. §103, then any claims depending therefrom – e.g. claims 2-6, 8-12, 14-17, 19, 21-24 and 26 – are also non-obvious. See M.P.E.P. §2143.03. For at least the foregoing reasons, Applicants request that the above 35 U.S.C. §103(a) rejection of claims 1-17, 19-24 and 26 based on *ITU-T G.729, G.729 Appendix B* and *Thyssen* be withdrawn.

CONCLUSION

For at least the foregoing reasons, Applicants submit that the objections and rejections have been overcome. Therefore, claims 1-17, 19-24 and 26 are in condition for allowance and such action is earnestly solicited. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present application. Please charge any shortages and credit any overcharges to our Deposit Account number 02-2666.

Respectfully submitted,
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